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$$OS = -\frac{c}{b}, \quad SR = \pm\frac{c}{ab}\sqrt{a^2+b^2}.$$

Hence,

$$d = \frac{c-k}{a}\left(-\frac{c}{b}\right)\frac{ab}{\pm c\sqrt{a^2+b^2}} = \frac{ax_1+by_1+c}{\mp\sqrt{a^2+b^2}}.$$

As $-c$ was a factor, we have the usual convention of taking the sign of the radical opposite to that of c.

NOTES AND NEWS.

EDITED BY D. A. ROTHROCK, Indiana University, Bloomington, Indiana.

Mr. H. R. **DOUGHERTY**, head of the department and professor of mathematics in New York Military Academy, Cornwall-on-Hudson, has been commissioned first lieutenant of infantry in the officers' reserve corps of the national army.

Professor M. E. **GRABER**, of the department of physics, Heidelberg University, Tiffin, O., and a charter member of the Association, is on leave of absence studying at the University of Chicago.

Miss B. M. **TURNER**, a charter member of the Association, and formerly principal of the Moundsville (W. Va.) High School, is assistant director of The Phebe Anna Thorne Model School, of Bryn Mawr College.

Mr. **RALPH BEATLEY**, formerly instructor in mathematics in the Horace Mann High School, New York City, has been commissioned second lieutenant in the Coast artillery service of the regular army.

Professor L. P. **EISENHART**, of Princeton University, as vice-president, section A, American Association for the Advancement of Science, delivered his retiring address at the Pittsburgh meeting, on the subject "The kinematical generation of surfaces."

In Vol. 11, No. 4, of *The Tôhoku Mathematical Journal,* Sir **THOMAS MUIR** has a paper on "A theorem including Cayley's on zero axial skew determinants of even order"; and in the *Transactions of the Royal Society of South Africa,* Vol. VI, Part I, a paper entitled "A note on Pfaffians connected with the difference-product."

Dr. W. S. **FRANKLIN**, formerly of Lehigh University, has been appointed special lecturer in physics and electrical engineering in the Massachusetts Institute of Technology.

According to *Science,* Professor C. W. **COBB**, of Amherst College, has been granted leave of absence to enter the aviation service of the government as an instructor in connection with the eight ground schools for aviators.

Professor L. C. Karpinski, of the University of Michigan, addressed the high school teachers of mathematics at the Rural Life Conference held at Kirksville (Mo.) Normal School, November 2, on "Practical applications of high school mathematics"; he also addressed the general session of the Conference on the "Causes of the war."

Professor G. Veronese, of the University of Padua, died on July 17, 1917, at the age of sixty-three years. He was the author of works on hypergeometry, was a member of many learned societies including the Accademia dei Lincei, and the National Italian Academy, and had been professor of mathematics at Padua during the past thirty-four years.

The eighth regular meeting of the Southwestern Section of the American Mathematical Society was held at the University of Oklahoma, Norman, Oklahoma, on December 1, 1917. The members present were guests at a luncheon served by the University on Saturday at noon. Eleven papers appeared upon the printed program, presented by representatives from the following educational institutions: University of Arkansas, University of Illinois, University of Missouri, University of Kansas, University of Nebraska, University of Oklahoma, Washington University and William Jewell College.

The address of Sir Joseph Larmor, retiring president of the London Mathematical Society, appears in Part I, Vol. 16, of the *Proceedings* of the Society, published in April, 1917. The address of the retiring president was devoted to the history of the Society, tracing briefly its growth and usefulness from its origin at University College, London, on January 16, 1866, with twenty-seven members, under the leadership of Professor De Morgan, to the present time. The early membership included such noted mathematicians as De Morgan, Sylvester, Cayley, Harley, Tucker, H. J. S. Smith, Archibald Smith, Clerk Maxwell, Clifford, Stirling, and Lord Rayleigh.

The spring meeting of the Swiss Mathematical Society was held at Zürich on May 10, under the presidency of Marcel Grossmann. At this meeting Professor J. Hadamard, of Paris, delivered an address on "The notion of analytic function and partial differential equations." The regular meeting of the Society was held at Zürich on September 11. At this meeting, besides the papers by local members of the Society, addresses were made by Professor D. Hilbert, of Göttingen, on "Axiomatic thought"; by Professor C. Caratheodory, of Göttingen, "Concerning the geometric treatment of extrema in double integrals"; and by Professor A. Emch, of the University of Illinois, "Concerning plane curves with certain properties."

The Mathematics Club of Chicago High School Teachers, in coöperation with a national committee of the Mathematical Association of America, is investigating the reasons for the teaching of mathematics in secondary schools. The results of a part of the study appear in *School and Society*, November 17, under the title The Status of Mathematics in Secondary Schools. Six questions were submitted to a large number of business and professional men of Chicago; fifty-five replies were received. The following is the substance of the questions, with the answers: (1) Was the study of high school mathematics worth while to you? Answers: Yes, 43; very important, 7; negative, 6. (2) Did its study contribute anything which could not have been obtained in equal degree by some other subject? Answers: Yes, 36; uncertain, 8; negative, 6. (3) In employing or advising a young person in line of your profession what importance would you attach to a good high school record in mathematics? Answers: Great importance, 19; considerable importance, 20; little importance, 2; no importance, 3. (4) In planning the secondary education of your son or daughter would you include algebra and geometry? Answers: Both, 42; algebra, 3; neither, 2. (5) Is a knowledge of algebra and geometry of any practical value in your profession? Answers: No, 26; yes, 23. (6) Do you think algebra and geometry should be retained in our secondary schools? Answers: Yes, 46; optional, 2; negative 2. The study also contains quotations from a number of the replies received, showing interesting comments upon the importance of mathematical training afforded by the secondary schools.

There are numerous calls for back numbers of the MONTHLY which cannot be supplied from any files now in our possession, and yet it is of great importance, especially in the case of libraries, that missing copies should be found in order to complete their files. For example, the library of the University of Wisconsin, with our assistance, has been able to complete its set with the exception of the June-July number of volume IV, 1897, and the March number of volume V, 1898. A liberal price will be paid for these two numbers. Please report to the Secretary, W. D. Cairns, who has charge of all the files.

The Missouri Section of the Mathematical Association of America met at Kansas City on Saturday, November 16, 1917. The chairman, Professor L. D. AMES, of the University of Missouri, presided, and nine papers were presented during the two sessions. A full report of this meeting will appear in an early issue of the MONTHLY.

Mr. S. A. JOFFE, assistant actuary of the Mutual Life Insurance Company of New York, has an article entitled "Interpolation Formulae and Central Difference Notation" in the *Transactions of the Actuarial Society of America*, Vol. XVIII, Part I, No. 57, in which a review of the subject is made from the time of Newton down to the present.

Professor OSWALD VEBLEN, of Princeton University, has been commissioned a captain of ordnance in the reserve corps.

Lieutenant WALTER L. HART, formerly of Harvard University, who was commissioned with the field artillery of the regular army and stationed at Fort Russell, Wyoming, has been transferred to the coast artillery and is now at Fort Monroe. Professor A. A. BENNETT, of the University of Texas, and Dr. E. A. T. KIRCHER, of Harvard University, are captains in the coast artillery.

One of our members wishes to secure a complete set of Forsyth's *Theory of Differential Equations*, the first volume, at least, of which is out of print, and our Bureau of Information is unable to give any assistance. Any one who may know where this set may be obtained will confer a favor by reporting to the Secretary.

The library of the Association is now being organized in a room provided by the Oberlin College library. Members are again reminded that it is their privilege to contribute to this library copies of their own published books, or of other books in their possession or control. A special label has been provided for all contributed books showing the donor's name and date of gift, and a personal acknowledgment will be made of all books received. As soon as practicable a report will be made showing a list of the books already in hand.

THE following 34 doctorates in American Universities were conferred in the year 1916–1917 with mathematics as major subject; the subject of the thesis is added in each case:

J. D. BARTER (California), "A contribution to the theory of vector functions";

C. C. BRAMBLE (Johns Hopkins), "A complete system for a collineation group isomorphic with the group of the double tangents of a plane quartic";

C. C. CAMP (Cornell), "An extension of the Sturm-Liouville expansion";

SARAH E. CRONIN (Columbia), "Geometric properties completely characterizing all the curves in a plane along which the constrained motion is such that the pressure is proportional to the normal component of the acting force";

W. L. CRUM (Yale), "Perturbations caused by close approach of two asteroids";

MARY F. CURTIS (Harvard), "Curves invariant under point transformations of special type";

T. DANTZIG (Indiana), "Contributions to the theory of plane transformations";

L. R. FORD (Harvard), "On rational approximations to an irrational complex number";

SISTER M. GERVAS (Catholic University of America), "On the cardioids fulfilling certain assigned conditions";

E. D. GRANT (Chicago), "The motion of a flexible cable in a vertical plane";

C. M. HEBBERT (Illinois), "Projective pencils of stelloids and the curve generated by them";

A. W. HOBBS (Johns Hopkins), "On a problem of projectiles";

T. R. HOLLCROFT (Cornell), "On the types of plane (2, 3) correspondences";

GOLDIE P. HORTON (Texas), "Lebesgue integrals";

M. T. HU (Harvard), "Linear integro-differential equations with a boundary condition";

E. P. HUBBLE (Chicago), "Photographic investigations of faint nebulae";

W. G. HUBERT (New York University), "Sextic curves with two triple points";

K. W. LAMSON (Chicago), "A general implicit function theorem with an application to problems of relative minimum";

GILLIE A. LAREW (Chicago), "Necessary conditions for the problem of Mayer in the calculus of variations";

FLORA E. LESTOURGEON (Chicago), "Minima of functions of lines";

A. S. MERRILL (Chicago), "An isoperimetric problem with variable end-points";

B. E. MITCHELL (Columbia), " Complex conics and their real representation ";

H. C. M. MORSE (Harvard), "Certain types of geodesic motion on a surface of negative curvature";

G. W. MULLINS (Columbia), "Differential invariants under the inversion group ";

I. C. NICHOLS (Michigan), "A comparative study of fractions in the early treatises on the Hindu art of reckoning";

J. N. RICE (Catholic University of America), " On the in- and circumscribed triangles of the plane rational quartic curve ";

J. F. RITT (Columbia), " On a general class of linear homogeneous differential equations of infinite order with constant coefficients ";

E. F. SIMONDS (Columbia), " Differential invariants in the plane ";

T. McN. SIMPSON (Chicago), "Relations between the metric and projective theories of space curves";

D. M. SMITH (Chicago), " Jacobi's condition for problems of Lagrange in the calculus of variations";

G. W. SMITH (Illinois), "On nilpotent algebras generated by two units such that i is not an independent unit";

E. A. WHITE (Cornell), "Mechanical theory of the plow";

W. H. WILSON (Illinois), "On a certain class of functional equations."

NOTES ON THE THIRD ANNUAL MEETING OF THE ASSOCIATION.

By the time this issue[1] reaches the members, the third annual meeting of the Association will have taken place at Chicago. The program was in charge of a committee of three consisting of Professors ELIZABETH B. COWLEY of Vassar College, O. D. KELLOGG of the University of Missouri, and E. J. WILCZYNSKI of the University of Chicago.

The meetings were arranged in conjunction with the Chicago Section of the American Mathematical Society by a joint committee including representatives of all the local institutions as follows: Professors W. D. CAIRNS of Oberlin College, D. F. CAMPBELL of Armour Institute, ARNOLD DRESDEN of the University of Wisconsin, J. A. FOBERG of Crane Junior College, W. B. FORD of the University of Michigan, E. J. MOULTON of Northwestern University, H. L. RIETZ of the University of Illinois, and H. E. SLAUGHT of the University of Chicago.

The meetings of the Association opened on Thursday, December 27, with a number of papers on miscellaneous topics presented by members. Thursday afternoon was devoted to a consideration of the teaching of Descriptive Geometry as a collegiate subject. An address was given by Professor Roever of Washington University, St. Louis, Missouri, who has made a prolonged study of this question, and this was followed by several short discussions from teachers of mathematics and teachers of drawing in both colleges and high schools. A special invitation was sent out to teachers of drawing, art, and architecture in all the states contiguous to Chicago to attend this session.

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[1] Delayed on account of miscarriage of proof in the holiday congestion of the mails.

Following the afternoon session, the annual meeting of the Council was held. Important matters of policy and procedure were among the items of business.

On Friday morning the time was divided between the Association and the Society. At nine o'clock, reports were made by three standing Committees of the Association, namely, (1) the Committee on Mathematical Requirements, (2) the Committee on Libraries, and (3) the Committee on a proposed Mathematical Dictionary. At this session matters of vital importance to Institutional Representatives were discussed. At half-past ten the opening session of the Chicago Section of the American Mathematical Society was held and members of the Association were invited to attend this session.

On Friday afternoon there was a joint session of the two organizations at which Professor W. B. Ford of the University of Michigan gave his retiring address as Chairman of the Chicago Section on "A Conspectus of the Modern Theory of Divergent Series" and Professor L. D. Ames of the University of Missouri gave an address on behalf of the Association on "A Definition of the Real Number System by means of Infinite Decimals."

At the close of this session came the annual business meeting of the Association at which certain amendments to the Constitution and By-Laws were voted upon and the officers for 1918 were elected.

Both sessions on Saturday were devoted to the reading of papers before the Chicago Section of the American Mathematical Society.

On Thursday evening occurred the joint dinner of the two organizations, and on Friday evening all were invited to attend the dinner of the American Association of University Professors whose meetings were in session at this time.

A full report of the third annual meeting of the Association will appear in the February issue of the MONTHLY.

SPECIAL NOTICE TO ALL MEMBERS.

In accordance with the prevailing spirit of economy with respect to things not absolutely necessary, it is proposed to greatly condense the Register of the Association for 1918, and to issue, early in January, a mailing list of officers and members containing all promotions, appointments and changes of address which members have reported or may report immediately to the Secretary. His mailing-list is already fairly complete, but in order to insure greater accuracy and completeness, will each member "do his bit" by reporting to the Secretary at once any item which should be included?

This is the only notice that will be given.